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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,785	12/11/2003	Darin Kent Woolf	1042-039-US	8181

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EXAMINER	
CYGAN, MICHAEL T	
ART UNIT	**PAPER NUMBER**
2855	

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/733,785	WOOLF ET AL.	
	Examiner	Art Unit	
	Michael Cygan	2855	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 March 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-42* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 December 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *17 March 2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

   at page 10 line 1, "it's" should be "its";

   at page 17, line 14, the term "Applicant's" should be removed;

   at page 20, line 19, the term "Hysteresis" should be lowercase; and

   numerals 22 and 30 are not in the drawings.

Appropriate correction is required.

Information Disclosure Statement

2. The entire chapter 7 of the Jerman reference has been considered, as indicated by the strikethrough of the previous limited page range on the IDS of 17 March 2004.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 16-24, 28, 36, and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Girling (US 5,877,409). Girling discloses the claimed invention, a device for measuring fluid properties during flow, comprising a base pipe member [84] having an inlet and an outlet, a slipstream flow block [85] including a central recess defining a fluid path from the base pipe inlet to the base pipe outlet, sensor port holes connected to a plurality of sensors including two pressure sensors [86,87], two temperature sensors (which may be RTDs; i.e., thermistors) [89,90], and a flow/density sensor [91], and a computer for acquiring data and reporting the above sensor properties as well as viscosity. The method of reporting properties from the data acquired in the manner above during pumping of the fluid is also disclosed. See particularly Figure 2 and description at column 5 line 39 through column 8 line 63.

4. Claims 1-18, 20, and 22-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Tietsworth (US 6,609,431 B1). Tietsworth discloses measurement and control of a soda (incl. diet)-syrup flowing mixture through a flowmeter having two MEMS pressure sensors [24,26], two temperature sensors [30,30], and a processor [28] which computes a matrix of flow-temperature-pressure measurements and outputs such measurements along with viscosities, densities, and flow rates of each mixture; see columns 5-6 and Figure 1.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 28, 32-35, 37, and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Girling (US 5,877,409) in view of Tietsworth (US 6,609,431 B1). Tietsworth teaches the claimed invention except for the use of a two part flow body. Girling teaches a slipstream measurement configuration comprising a base pipe member [84] having an inlet and an outlet, a slipstream flow block [85] including a central recess defining a fluid path from the base pipe inlet to the base pipe outlet, sensor port holes connected to a plurality of sensors including two pressure sensors [86,87], two temperature sensors (which may be RTDs; i.e., thermistors) [89,90], and a flow/density sensor [91], and a computer for acquiring data and reporting the above sensor properties as well as viscosity. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a slipstream configuration as taught by Girling in the invention taught by Tietsworth to form the measurement device, since Girling teaches that a slipstream configuration allows the use of narrower measurement pipes which

lead to increased accuracy of pressure measurements; see column 4 lines 17-30.

6. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Girling (US 5,877,409). Girling teaches the claimed invention except for the use of MEMS pressure sensors. However, the use of MEMS technology for pressure sensors is of notorious character in the measurement art and such use would have been well known and obvious to one having ordinary skill in the art at the time the invention was made. Note further applicant's specification at page 10 lines 16-17.

7. Claims 4-15 and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Girling (US 5,877,409) in view of Melendez (US 6,374,845 B1). Girling teaches the claimed invention except for application to soda, syrup, and diet soda. Melendez teaches the use of soda and syrup as product fluids having beverage quality determined through pressure and temperature measurement (see abstract). It would have been obvious to one having ordinary skill in the art to use soda and syrup as taught by Eggen in the invention taught by Melendez, since Melendez teaches the importance of determining such beverage qualities; see column 2 lines 15-24. The use of diet soda as a soft drink is of notorious character in the soft drink art and such

use would have been well known and obvious to one having ordinary skill in the art at the time the invention was made.

8. Claims 25-27 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Girling (US 5,877,409) in view of Eggen (WO 01/57492 A1). Girling teaches the claimed invention except for tabulation of values. Eggen teaches tabulating pressure and temperature data to measure viscosity data. It would have been obvious to one having ordinary skill in the art to use tabulation of data as taught by Eggen in the invention taught by Girling, since Eggen teaches that such tabulation allows advanced mathematical analysis for determination of viscosity.

9. Claims 25-27, 31, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Girling (US 5,877,409) in view of Hayes (US 3,952,577). Girling teaches the claimed invention except for vortice-reducing means and pitot port adjacent the fluid outlet, or the inlet cross-section being larger than a rectangular cross-section of the flow block from a right angle turn. Hayes teaches an apparatus for measuring viscosity and flow rate of fluids using pressure sensors, and incorporating a part [32] minimizing turbulence and reducing the cross-sectional area adjacent the outlet, as well as a pitot port adjacent the outlet which reduces the cross-sectional area such that the vertical cross-section is smaller than the inlet cross-section; see Figure 2 and

column 7 lines 40+ and column 10 lines 3-11. It would have been obvious to one having ordinary skill in the art to use vortice-reducing means and pitot port adjacent the fluid outlet as taught by Hayes in the invention taught by Girling to form the measurement body, since Hayes teaches that such ensures beneficial laminar flow and the use of the pitot port connecting the pressure sensor exhibits a "useful output differential pressure dependence"; see column 7 lines 40+ and column 10 lines 3-11.

10. Claims 30, 31, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Girling (US 5,877,409) in view of Gehman (US 6,591,674 B2). Girling teaches the claimed invention except for a circuit board in contact with pressure and temperature transducers, circular-rectangular-circular recess geometry, and the inlet cross-section being larger than a rectangular cross-section of the flow block from a right angle turn. Gehman teaches a fluid flow sensor having a circuit board in contact with pressure and temperature transducers, circular-rectangular-circular recess geometry, and the inlet cross-section being larger than a rectangular cross-section of the flow block from a right angle turn; see abstract and Figures 14 and16, and column 1 lines 16-20, and column 2 lines 15-28. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the abovementioned circuit board and geometric features as taught by

Gehman in the invention taught by Girling, since Gehman teaches advantages such as reduced size and lower cost.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Temperature-pressure sensors for determining fluid properties are disclosed by Bice (US 4,425,790), Tjahjadi (US 6,405,579 B1), Foust (US 3,559,464), Uchida (US 3,548,638), Jones (US 3,024,642), and Wenzel (US 3,600,945). Multiple pressure sensors for determining fluid properties are disclosed by Haertl (US 5,537,860), Modisette (US 3,839,914), Gleissle (US 6,386,016 B1), Hartemann (US 4,326,423), and Van Berk (US 6,550,327 B1). Housing arrangements for viscometers/flow sensors utilizing pressure sensors are disclosed by Ball (US 4,750,351), Mayer (US 6,729,181 B2), Bohrer (US 4,829,818), and Arai (US 5,741,968).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Cygan whose telephone number is (571) 272-2175. The examiner can normally be reached on 8:30-6 M-Th, alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on 571-272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MICHAEL CYGAN, PH.D.
PRIMARY EXAMINER